

CLAIMS

1. A method of forming a platinum aluminide diffusion barrier on a metallic substrate which comprises a titanium alloy, the method comprising the steps of:
 - a) applying to the metallic substrate a coating comprising particulate platinum and particulate aluminium in an organic carrier;
 - b) performing a reaction treatment on the thus applied platinum and aluminium which comprises subjecting the platinum particles and the aluminium particles to a temperature in the range of about 200°C to about 600°C for a time sufficient for the reaction between the platinum and the aluminium to form a diffusion barrier on the metallic substrate.
2. A method according to claim 1, wherein the reaction treatment takes place in an inert atmosphere.
3. A method according to claim 1, wherein the coating is applied in more than one step, whereby the coating is built up on the metallic substrate.
4. A method according to claim 1, wherein the platinum particles and the aluminium particles are applied as the particles entrained in the organic carrier, as a single composition or sequentially as separate compositions.
5. A method according to claim 1, wherein the organic carrier comprises relatively volatile components and relatively non-volatile components, whereby the organic carrier forms a dry residue on the metallic substrate after application, anchoring the platinum particles and the aluminium particles for the reaction treatment to form the diffusion barrier.

6. A method according to claim 1, wherein the aluminium particles have an average effective diameter in the range of about 2 to about 10 μm .
7. A method according to claim 1 of the preceding claims, wherein the platinum particles have an average effective diameter in the range of about 2 to about 10 μm .
8. An oxidation resistant structure comprising a metallic substrate which comprises a titanium alloy and a platinum aluminide diffusion barrier disposed thereon, wherein the structure is formed by a method according to claim 1.
9. A structure according to claim 8, wherein the platinum aluminide diffusion barrier has a substantially uniform thickness over the major part of its area.
10. A structure according to claim 8, which comprises an aerospace component or a portion thereof.
11. A structure according to any one of claim 8, wherein the platinum aluminide diffusion barrier has a thickness in the range of about 2 to about 10 μm .
12. An oxidation resistant aerospace component comprising a metallic substrate which comprises a titanium alloy and a substantially uniform platinum aluminide diffusion barrier disposed thereon said diffusion barrier being formed by a method according to claim 1.
13. An oxidation resistant aerospace component as claimed in claim 12 wherein the diffusion barrier is continuous over an area of at least about 200 cm^2 .
14. A component according to claim 12 wherein the platinum aluminide diffusion barrier has a thickness in the range about 2 to about 10 μm .